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(54) Foldable warning distress sign.

(57) A kind of distress sign has a center of two-section shafts (12, 14) with a plurality of resilient ribs (34) to form a structure frame supporting the canvas sheet cover (50) of pyramid shape; every face of the pyramid canvas sheet cover (50) is painted in triangular warning sign; a sliding slide piece (22) on the lower shaft (12) controls the automatic unfolding and closing of the distress sign; the upper shaft (14) retracts itself in the lower shaft (12) and the canvas sheet cover is folded to three plies thus to effectively lessen the volume and shorten the length of the distress sign.

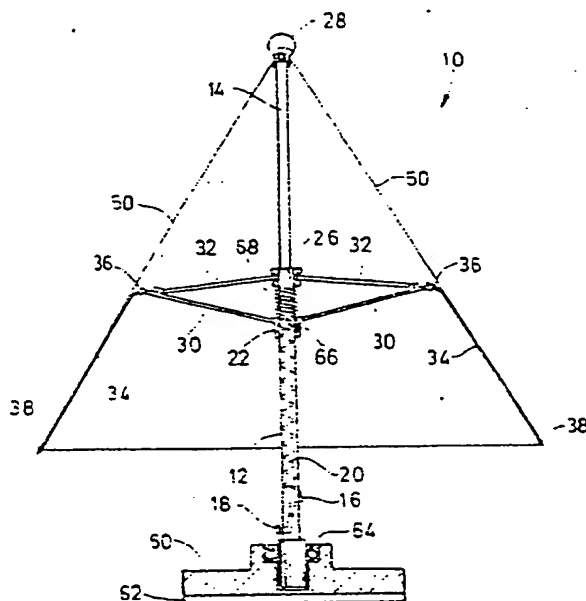


FIG. 1

EP 0 352 386 A1

## MULTI-APPLICATION STEREOSCOPIC AUTO DISTRESS SIGN

This invention relates to a foldable warning distress sign, especially a pyramid, auto unfolding or hand-closed one.

For warning the passing vehicles and pedestrians on the alert to avoid danger, a distress sign has to be placed at the spot behind the broken down vehicle or the worker working on road. A single face is always introduced in design for conventional distress sign and the conventional distress sign is supported by means of a cross support. So, it is easy for the vehicle coming only from rear to watch the distress sign but not easy for the vehicles coming from left and right and for the people working just at the corner of road (or crooked road) to watch the distress sign and, simultaneously, such distress sign of single face, due to not only its single face to receive the wind force but its being unable to revolve offsetting the wind pressure as well, is apt to be tilted over when blown by wind so as to have no warning function. It is, therefore, dangerous and threatening to safety of the driver of the broken down vehicle, the people working on road and the vehicles passing.

Another drawback of the conventional single face distress sign is unable or uneasy to be folded. Such conventional distress sign unable to be folded, though low at price and convenient for use, needs an enough room to be placed while not used, especially is not suitable for the vehicle having no enough room. That is why it is getting eliminated. Though the foldable single face distress sign has no problem to be placed, every side of the distress sign and its support has to be turned by hand so that the single face distress sign can be unfolded or closed. It takes a lot of time and is much inconvenient to operate it and, furthermore, the pivotal joint on the triangle top of the single face distress sign is apt to be loose after it has been used for a period of time so that the distress sign is unable to be unfolded or kept up its standing function.

Said as above, we need a kind of new design distress sign, preferably a stereoscopic shape, suitable for crooked road or crossroad, convenient to be operated, able to automatically unfold and close and, moreover, able to effectively lessen its volume and shorten its length when it is folded.

The object of this invention is to provide an ability for stereoscopic distress sign to give a clearly effectively warning sign for vehicles and pedestrians coming from rear, diagonal rear, left and right even from front.

Another object of this invention is to provide an ability for the aforesaid stereoscopic distress sign to automatically unfold and close, to be simply

operated, to automatically fold when closed, and to be effectively lessened in volume and shortened in length thus to be conveniently deposited, to be smaller in volume and shorter in length when closed than conventional distress sign so as to be put in motorbike's case by motorcyclist in addition to being used by the owner of the vehicle.

And another object of this invention is to provide an ability for the above said stereoscopic distress sign to receive strong wind without being tilted over.

Then another object of this invention is to provide a magnetism base for the aforesaid distress sign so that the stereoscopic distress sign is directly adhered to the top of vehicle or put on road for use behind the vehicle.

A multi-application stereoscopic auto distress sign of achieved the aforesaid various objects and others not to be described has a shaft of upper and lower shafts and a plurality of resilient ribs supporting canvas sheet cover looking something like pyramid shape of which on every face a triangular warning sign is painted; a sliding slide piece on the lower shaft is controlling the auto unfolding and closing of the distress sign, the upper shaft retracts itself in the lower shaft in closing state and the canvas sheet cover is folded to three plies so as to effectively lessen the volume and shorten the length of the distress sign.

Every resilient rib is supported by a rigid rib and a supporting rod and, simultaneously, a pin between slide piece and upper shaft makes them linked to move

A spring latch latches the slide piece located at the below dead point and the upper shaft to retain the distress sign in closing state during closing of the distress sign; the thrust of a compression spring pushes upward the slide piece and upper shaft to make the distress sign automatically unfold when user removes the spring latch.

Lower shaft is revolvably inserted in a circular base and is commensurate with the gradient slope between triangular canvas sheet cover and ground so as to make the revolvable pyramid distress sign revolve offsetting the wind pressure thus to prevent the distress sign from being tilted over when blown by strong wind.

Further objects and advantages of the invention will be apparent from a reading of the following detailed description, taken in conjunction with the figures of the accompanying drawings, in which:

Fig. 1 section view of this invention;

Fig. 2 external look perspective view;

Fig. 3 enlarged section view of the distress sign in unfolding state of this invention, wherein the

canvas sheet cover and base omitted;

Fig. 4 enlarged section view of the distress sign in closing state, wherein the base omitted; and

Fig. 5 enlarged head section view, mounted on top of the center shaft, made of transparent material, a flash bulb set wherein.

Please refer to various views, they illustrate the aforesaid multi-application auto stereoscopic distress sign of this invention; and please refer to numeral 10 standing for the auto stereoscopic distress sign.

The stereoscopic distress sign has a plurality of resilient ribs 34 on its center shaft of upper shaft 14 and lower shaft 12 to form a structure frame to support the canvas sheet cover 50; each resilient rib 34 is supported by means of a set of rigid ribs 30 and supporting rods 32.

The shaft located at the center position is formed of the flexible upper shaft 14 and lower shaft 12; the upper shaft 14 can be inserted in the lower shaft 12 for shortening the length of the shaft; a head 28' on top of the upper shaft 14 is used for making the center portion of canvas sheet cover 50 and the upper shaft 14 closely jointed; a fixed runner 26 on top of the lower shaft, 2; the end of the lower shaft 12 can be inserted in a circular base 60 and a bearing 64 at the joint between the lower shaft 12 and the base 60 permits lower shaft 12 to freely turn inside the base 60.

A slide piece 22 is axially moving along the periphery of the lower shaft 12 and, simultaneously, is connected to the end of the upper shaft 14 by means of a pin 66 so as to make the slide piece 22 and the upper shaft 14 synchronously move.

A structure frame formed of the aforesaid resilient rib 34, rigid rib 30 and supporting rod 32 supports the canvas sheet cover 50, wherein the two ends of the rigid rib 30 is pivotally connected respectively to the sliding slide piece 22 on the lower shaft and to the connector arm 36 having an insert of resilient rib 34; one end of supporting rod 32 is pivotally connected to the inactively fixed runner 26, the other end of it is pivotally connected to the near outer end of the rigid 30; one end of the resilient rib 34 is inserted in the connector arm 36 and the outer end 38 of the resilient rib 34 is knotted with the canvas sheet cover 50.

The slide piece 22 and the upper shaft 14, when being pivotally pushed upward to the near top of the lower shaft 12, make various rigid ribs 30, supporting rods 32 and resilient ribs 34 unfolded to form a structure frame supporting the canvas sheet cover 50 to be a pyramid shape; every face of supported pyramid shape canvas sheet cover 50 has a painted triangular warning sign 52 which should be painted in fluorescent lacquer or in reflected light material for warning effect at night. A buffer spring 68 fixed below the fixed runner 26

generates a brake and buffer action.

Side piece 22 and upper shaft 14, when being pivotally pulled downward to the near end of the lower shaft 12, make various rigid ribs 30, supporting rods 32 and resilient ribs 34 inwardly closed tightly; due to upper shaft 14 retracting itself in the lower shaft 12 and canvas sheet cover folded up to three plies and rigid rib 30, resilient rib 34 and supporting rod 32 closed inwardly, the volume is smaller and length is shorter when the distress sign 10 is closed than that when it is unfolded so that it is very easy for the distress sign 10 to be placed in a small case at front seat or in the trunk of vehicle or in the motorbike's case.

The slide piece 22 is latched in the slot 24 by means of spring latch 16 so as to retain the distress sign 10 in its closing state and, simultaneously, the end-fixing spring 20 located in the lower shaft 12 is compressed by the pressure of the upper shaft 14 pivotally moving downward, the compressed spring 20 provides any time as required a thrust to make the slide 22 and upper shaft 14 return to dead point; when the slide piece 22 is latched by the latch 16, the thrust of the spring is countervailed. Therefore, with the closing state of the distress sign 10, when user presses down the button 18 of the spring latch to relieve the latch 16 latching slide piece 22, the spring 20 immediately regain its thrust to push slide 22 and upper shaft 14 upward to dead point so as to make the distress sign 10 automatically unfold as shown in figures 1 and 2.

The bottom of disk-shaped base 60 supporting center shaft of upper shaft 12 and lower shaft 14 and permitting itself to freely turn is covered with a ply of plastic magnet so as to make the stereoscopic distress sign 10 immediately adhered to the top of the vehicle when the vehicle breaks down (especially, when the vehicle is getting slow and has to keep to the roadside because of the tire burst and water overheated; the stereoscopic distress sign 10 beetling over the top of the vehicle differs from any other warning device mounted on the vehicle body such as two amber warning flashers and from multi-function third brake lamp etc. So, with the vehicle coming behind from other lane, the vehicle to the next and others in wake of the next coming from the same lane and others coming which couldn't see the conventional two amber warning flashers, the warning of the convex distress sign 10 on top of the vehicle is more effective than that of the conventional warning device mounted on the vehicle body so as to alert all the vehicles behind to avoiding danger in advance. Please see Fig. 5, in order to increase the warning effect of the stereoscopic distress sign 10, the head 28' on top of the center shaft is made of transparent material and the inside of the head 28'

is additionally set a flash bulb 72 with bi-metal connector 74, the power of the flash bulb 72 can come from lighter or from self-provided dry cell.

In addition, for operational convenience to user, the stereoscopic distress sign is directly mounted on top of the vehicle, the means to mount it is that the circular base is removed off first, then the center shaft, resilient rib, rigid rib and supporting rod and canvas sheet cover are put in a fixed sleeve on top of the vehicle and then the center shaft is driven to be extended and retracted by a stepping motor or by a drive motor so as to achieve the automatically unfolding and closing function of the stereoscopic distress sign, wherein the control switch of the stepping motor can be directly operated by the driver.

Certainly, the stereoscopic distress sign 10 with base 60 is also placed on the road some distance behind the broken down vehicle.

An appropriate gradient slope between the supported pyramid canvas sheet cover 50 and the road surface is kept and the center shaft of lower shaft 12 and upper shaft 14 can freely turn, so when any face or every face of the canvas sheet cover 13 blown by strong wind or by other unbalanced action force, the stereoscopic distress sign 10 except base 60 has a revolution movement which can eliminate the wind pressure action thus to make the stereoscopic distress sign 10 immune from being tilted over and to raise the warning effect of the triangular warning sign 52.

This stereoscopic distress sign 10 can provide a warning for vehicles and pedestrians coming from every direction, has an automatically unfolding and closing mechanism and, furthermore, and is easily deposited, especially is suitable for being used by the owners of vehicle and motorbike and by general workers working on road.

Having described my invention as related to the embodiment shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be constructed broadly within its spirit and scope as set out in the appended claims.

## Claims

1. A stereoscopic distress sign, comprising:  
pyramid shape canvas sheet cover to be supported has a painted triangular warning sign on its every face;  
a base;  
an extensible-retractable center shaft of upper shaft and lower shaft vertically inserted in the base can freely turn (the center shaft has an upper shaft and a lower shaft);

a plurality of resilient ribs forms a structure frame on center shaft to support the pyramid shape canvas sheet cover;

a plurality of rigid ribs and supporting rods by them every resilient rib is supported;

a slide piece on the center shaft controls the unfolding and closing of the distress sign;

a spring latch latching the slide piece to make the distress sign kept in closing state; and a compression spring provide any time as required an axial thrust for the slide piece so as to unfold the distress sign.

2. A distress sign according to claim 1, between the slide piece and upper shaft is connected by means of a pin which makes the two synchronously move.

3. A distress sign according to claim 1, wherein, each set of ribs includes a rigid rib and a supporting rod; the two ends of the rigid rib are pivotally connected respectively to the sliding slide piece and to the connector arm in which a resilient rib is fixedly inserted; one end of the supporting rod is fixed at the fixed runner on top of the lower shaft and another end of it is pivotally connected to the near outer end of the rigid rib.

4. A distress sign according to claim 1, wherein, the bottom of the base is covered with a ply of plastic magnet.

5. A distress sign according to claim 1, which has a head making the canvas sheet cover and center shaft closely jointed.

6. A distress sign according to claim 5, wherein the head is transparent and inside of it a flash bulb is set.

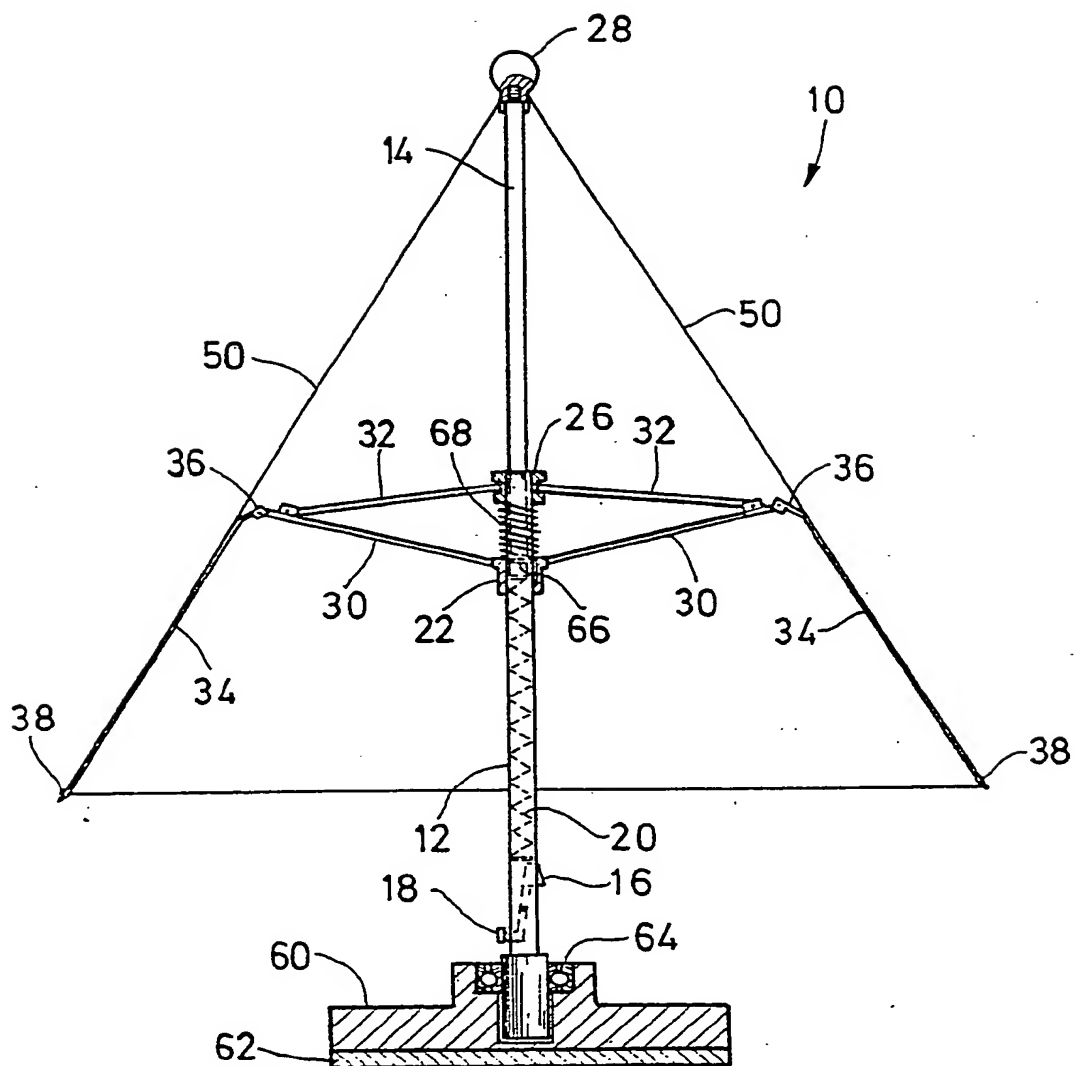


FIG. 1

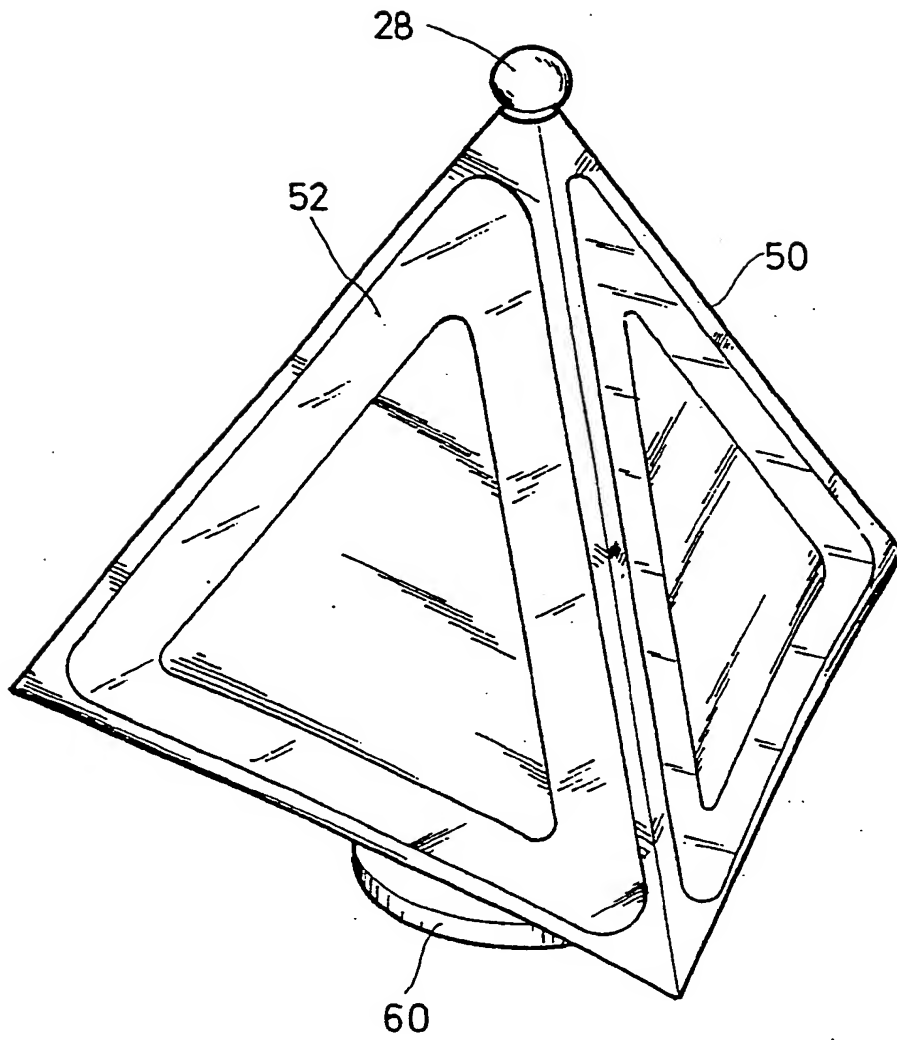


FIG. 2

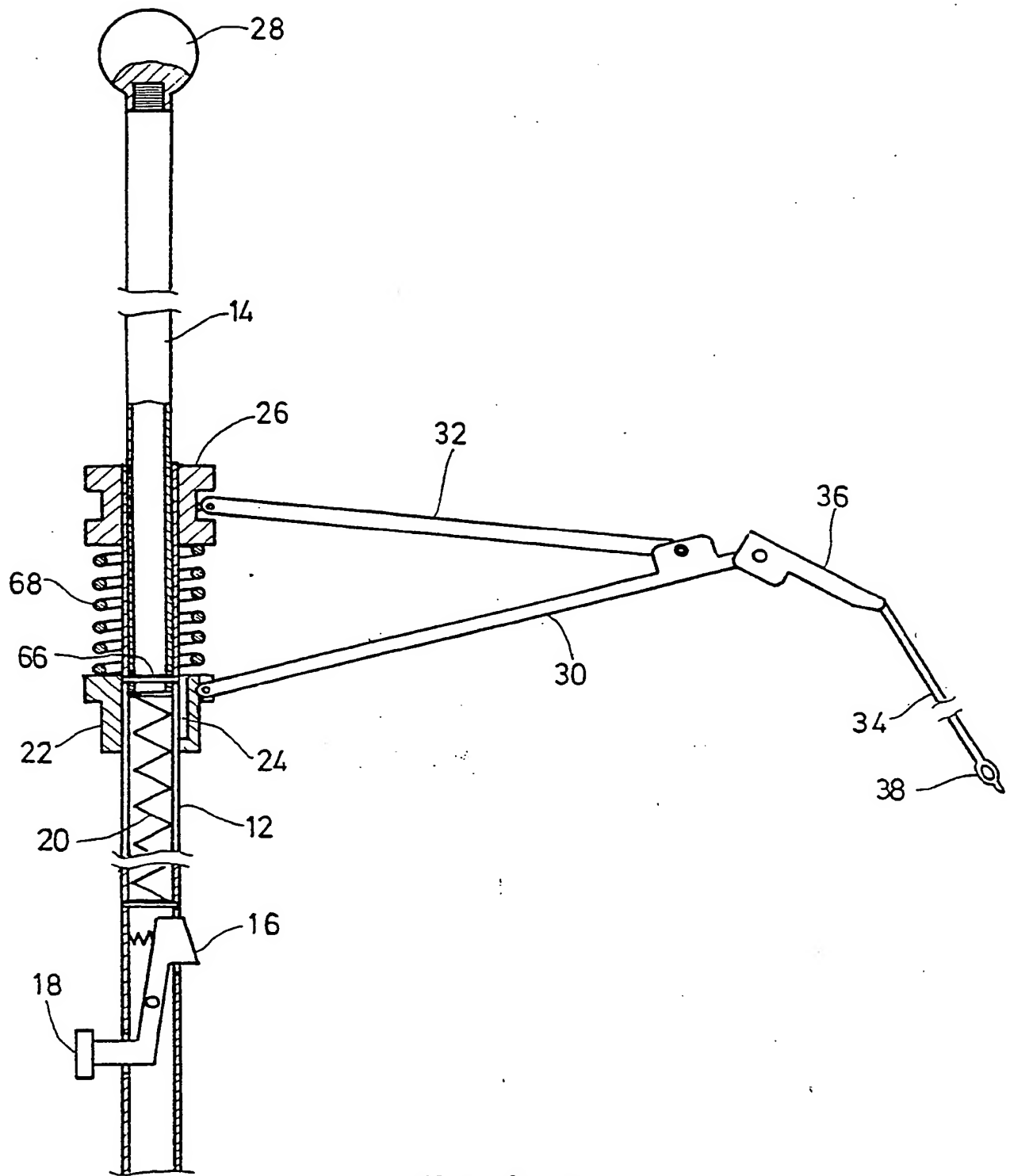


FIG. 3



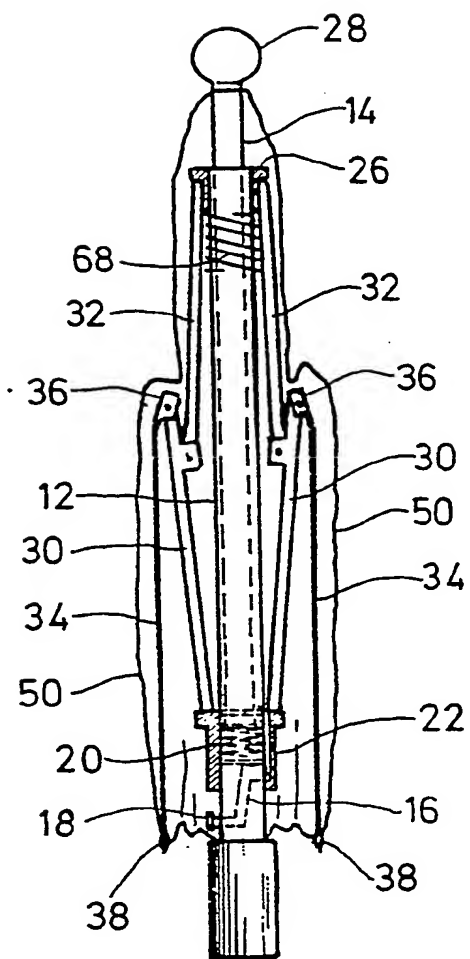


FIG. 4.

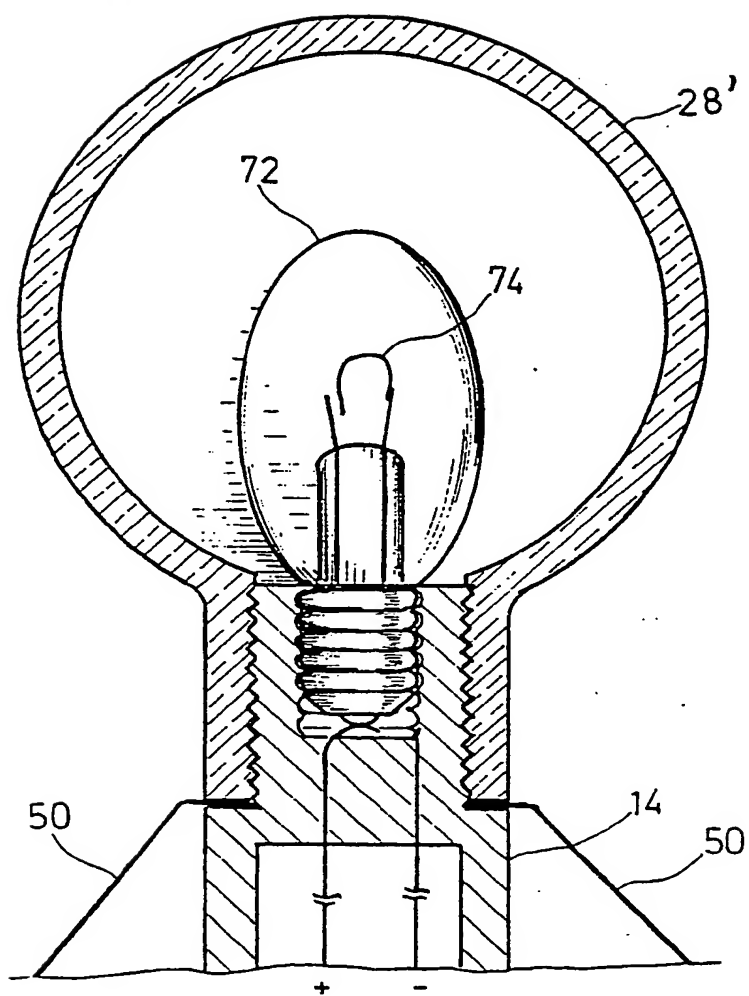


FIG. 5



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# EUROPEAN SEARCH REPORT

Application Number

EP 88 30 7039

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	GB-A- 961 401 (BUTZ) * Page 2, lines 26-85; figures 4,5 *	1	B 60 Q 7/00 E 01 F 9/01
Y	DE-B-1 152 644 (BOVENSCHEN) * Figure; column 3, lines 31-43 *	1	
A	DE-B-1 136 250 (JACOB ZINDEL GmbH) * Figures 1-3 *	1	
A	CH-A- 338 737 (LONGERT) * Whole document *	1	
A	DE-A-2 845 543 (HEITZMANN) * Figures 1-4 *	1,5,6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 60 Q E 01 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28-03-1989	Examiner ONILLON C.G.A.
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